

CLAIMS

What is claimed is:

1. A toilet tissue product, comprising:
 - 5 a cellulosic ply having at least one layer incorporating a repellant agent and a debonder which are each dispersed substantially uniformly throughout the layer, the layer configured to provide a substantially homogeneous structure having an increased absorbency rate of at least 10 seconds with a reduced dry tensile strength to provide rapid dissolution of the layer when it is immersed in liquid.
- 10 2. The toilet tissue product of claim 1, wherein the repellant agent is a hydrophobic chemical.
- 15 3. The toilet tissue product of claim 2, wherein the repellant agent includes mono- and distearamides of amonoethylethanolamine.
4. The toilet tissue product of claim 1, wherein the amount of repellant agent added is from about 1 to about 20 pounds of agent per ton of papermaking fiber.
- 20 5. The toilet tissue product of claim 5, wherein the amount of repellant agent added is from about 4 to about 8 pounds of agent per ton of papermaking fiber.
- 25 6. The toilet tissue product of claim 1, wherein the layer does not include permanent wet strength binder materials.
7. The toilet tissue product of claim 1, wherein the debonder comprises a fatty chain quaternary ammonium salt.
- 30 8. The toilet tissue product of claim 10, wherein the quaternary ammonium salt is an imidazoline quaternary ammonium salt.
9. The toilet tissue product of claim 1, wherein the amount of debonder added is from about 1 to about 10 pounds of debonder per ton of papermaking fiber.
- 35 10. The toilet tissue product of claim 10, wherein the amount of debonder added is from about 1.5 to about 6 pounds of debonder per ton of papermaking fiber.

11. The toilet tissue product of claim 1, wherein the repellent agent reacts with the debonder to provide strikethrough resistance.

12. The toilet tissue product of claim 11, wherein the debonder reacts with the repellent agent to provide reduced dry strength.

13. A toilet tissue product, comprising:
a cellulosic ply having at least one layer incorporating a repellent agent comprising a hydrophobic chemical and a debonder which are each substantially uniformly dispersed throughout the layer, the layer configured to provide a substantially homogeneous structure, the repellent agent reacting with the debonder to provide an increased absorbency rate of at least 10 seconds with a reduced dry tensile strength.

14. The toilet tissue product of claim 13, wherein the repellent agent includes mono- and distearamides of amonoethylethanolamine.

15. The toilet tissue product of claim 13, wherein the amount of repellent agent added is from about 1 to about 20 pounds of agent per ton of papermaking fiber.

16. The toilet tissue product of claim 15, wherein the amount of repellent agent added is from about 4 to about 8 pounds of agent per ton of papermaking fiber.

17. The toilet tissue product of claim 13, wherein the tissue does not include permanent wet strength binder materials.

18. The toilet tissue product of claim 13, wherein the debonder comprises a fatty chain quaternary ammonium salt.

19. The toilet tissue product of claim 18, wherein the fatty chain quaternary ammonium salt is an imidazoline quaternary ammonium salt.

20. The toilet tissue product of claim 13, wherein the amount of debonder added is from about 1 to about 10 pounds of debonder per ton of papermaking fiber.

21. The toilet tissue product of claim 20, wherein the amount of debonder added is from about 1.5 to about 6 pounds of debonder per ton of papermaking fiber.

22. A toilet tissue product, comprising:
a cellulosic ply having at least one layer incorporating a repellant agent comprising a hydrophobic chemical and a debonder comprising a fatty chain quaternary ammonium salt, each of which are substantially uniformly dispersed throughout the layer, the layer
5 configured to provide a substantially homogeneous structure, the repellant agent reacting with the debonder to provide to provide an increased absorbency rate of at least 10 seconds with a reduced dry tensile strength, wherein the layer does not include permanent wet strength binder materials.
- 10 23. The toilet tissue product of claim 22, wherein the repellant agent includes mono- and distearamides of amonoethylethanolamine.
24. The toilet tissue product of claim 22, wherein the amount of repellant agent added is from about 1 to about 20 pounds of agent per ton of papermaking fiber.
- 15 25. The toilet tissue product of claim 24, wherein the amount of repellant agent added is from about 4 to about 8 pounds of agent per ton of papermaking fiber.
26. The toilet tissue product of claim 22, wherein the fatty chain quaternary ammonium salt is an imidazoline quaternary ammonium salt.
- 20 27. The toilet tissue product of claim 22, wherein the amount of debonder added is from about 1 to about 10 pounds of debonder per ton of papermaking fiber.
- 25 28. The toilet tissue product of claim 27, wherein the amount of debonder added is from about 1.5 to about 6 pounds of debonder per ton of papermaking fiber.

29. A method for making a toilet tissue product in a wet-end stock system including a chest and a headbox, comprising:

forming an aqueous suspension comprising papermaking fibers;

adding a repellant agent and a debonder to the aqueous suspension of

5 papermaking fibers prior to forming a web and substantially uniformly dispersing the repellant agent and the debonder throughout the aqueous suspension of papermaking fibers;

depositing the aqueous suspension of papermaking fibers onto a forming fabric to form a web having a substantially homogeneous structure; and

10 drying the web to form a toilet tissue product having an increased absorbency rate of at least 10 seconds with a reduced dry tensile strength.

30. The method of claim 29, wherein the repellant agent is a hydrophobic chemical.

15 31. The method of claim 30, wherein the repellant agent includes mono- and distearamides of amonoethylethanolamine.

32. The method of claim 29, wherein the amount of repellant agent added is from about 1 to about 20 pounds of agent per ton of papermaking fiber.

20 33. The method of claim 32, wherein the amount of repellant agent added is from about 4 to about 8 pounds of agent per ton of papermaking fiber.

25 34. The method of claim 29, wherein the debonder comprises a fatty chain quaternary ammonium salt.

35. The method of claim 34, wherein the fatty chain quaternary ammonium salt is an imidazoline quaternary ammonium salt.

30 36. The method of claim 29, wherein the amount of debonder added is from about 1 to about 10 pounds of debonder per ton of papermaking fiber.

37. The method of claim 36, wherein the amount of debonder added is from about 1.5 to about 6 pounds of debonder per ton of papermaking fiber.

35 38. The method of claim 29, wherein the repellant agent and the debonder are added to the aqueous suspension of papermaking at any point between the chest and the headbox.

39. A method for making a toilet tissue product in a wet-end stock system including a chest and a headbox, comprising:

forming an aqueous suspension comprising papermaking fibers;

adding about 4 to about 8 pounds of repellant agent per ton of papermaking fiber

5 and about 1.5 to about 6 pounds of debonder per ton of papermaking fiber to the aqueous suspension of papermaking fibers prior to forming a web and substantially uniformly dispersing the repellant agent and the debonder throughout the aqueous suspension of papermaking fibers;

10 depositing the aqueous suspension of papermaking fibers onto a forming fabric to form a web having a substantially homogeneous structure; and

drying the web to form a toilet tissue product having an increased absorbency rate of at least 10 seconds with a reduced dry tensile strength.

15 40. The method of claim 39, wherein the repellant agent is a hydrophobic chemical.

41. The method of claim 40, wherein the repellant agent includes mono- and distearamides of amonoethylethanolamine.

20 42. The method of claim 39, wherein the debonder comprises a fatty chain quaternary ammonium salt.

43. The method of claim 42, wherein the fatty chain quaternary ammonium salt is an imidazoline quaternary ammonium salt.

25 44. The method of claim 39, wherein the repellant agent and the debonder are added to the aqueous suspension of papermaking at any point between the chest and the headbox.